



**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

**Part No:** \_\_\_\_\_ **PAR #:** \_\_\_\_\_ **Fault Category:** \_\_\_\_\_ **NCR: Yes No** **DQA:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Resolution:** \_\_\_\_\_ **Disposition:** \_\_\_\_\_ **QA: N/C Closed:** \_\_\_\_\_ **Date:** \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 70198

Tuesday, May 31, 2011 10:43:54 AM

Page 2

Item ID: D205-596-107

Accept

Revision ID:

Item Name: Crosstube Aft Extended

Start Date: 5/31/2011 Start Qty: 1.00

Required Date: 6/16/2011 Req'd Qty: 1.00

Reference:

Cust Item ID:

Customer:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

140

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Cut as per dimension sheet  
2-Deburr & Inspect for surface damage. Polish cut surface. Scribe part # and batch # on one end of tube.

Rm

13-06-05

160

0.00



HandFXtube

Crosstubes Chemical Conversion  
HandFinishing

Memo

0.00

Hand Finishing Crosstubes

Chemical Conversion Coat per QSI 005 4.1

Rm/mon L

13-06-11

170

0.00



QC

Quality Control

QC Inspect part completeness to step on W/O

Memo

0.00

DAS 16

13/06/14

QC 7  
13/6/15

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# Work Order ID 70198

Tuesday, May 31, 2011 10:43:54 AM



Page 3

Item ID: D205-596-107

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft Extended

Stop



Start Date: 5/31/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 6/16/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180		0.00							
	SprayPaint					1	0	0	13-6-24
SprayPaint	Memo	0.00							
Spray Painting	1-Prime inside and outside with Immron per QSI 005 4.2								
	Prime 122888 T: 11:00-12:00								
	Paint 125986 T: 4:00-5:00								
190		0.00							
	QC14- Inspect Spray Paint					1			13.06.25
QC	Memo	0.00							
Quality Control									
200		0.00							
	Crosstubes					1			13.06.27
Crosstubes	Memo	0.00							
Crosstubes	1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe								
	2- Apply magnobond 6398 as per dwg D205-596-107 Magnobond 6398								
	Batch: 124886 EXP: 09/13								
	3-Inst								
	Time: 10:00am								

W/O:		WORK ORDER CHANGES					
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

**Work Order ID 70198**

Tuesday, May 31, 2011 10:43:54 AM

Page 4

Item ID: D205-596-107

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft Extended

Start Date: 5/31/2011 Start Qty: 1.00

Cust Item ID:

Required Date: 6/16/2011 Req'd Qty: 1.00

Customer:




Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210  QC Quality Control	QC5- Inspect part completeness to step on W/O  Memo	0.00  0.00				①	②	13.07.03	
220  Packaging Packaging	Packaging  Memo Identify and pack for shipping as per PPP D205-596-107 Location: <u>113</u> PPP Rev: _____	0.00  0.00					13/7/11	SC	8
230  QC Quality Control	QC21- Final Inspection - Work Order Release  Memo	0.00  0.00						13/7/17	J

13-07-12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



Tuesday, May 31, 2011 10:44:31 AM

**Parent Item:** D205-596-107

**Parent Item Name:** Crosstube Aft Extended







**Start Date:** 5/31/2011

**Required Date:** 6/16/2011

**Start Qty:** 1.00

**Required Qty: 1.00**

**Comments:** IPP Rev:D 05.03.21 Added bending procedure KJ/JLM  
 IPP Rev:E 08-01-10 ECN 1075 DD  
 IPP Rev F 08.04.28 Added bending & mat'l EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2940-1 		Manufactured	No			200	Each	5.0000	2	2			
Support												12.06.27	
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				LG052				5		96803			
				60271				5					
D6008-180 		Manufactured	No			110	Each	21.0000	1	1			
Crosstube Extrusion													
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				LG				21					
				46779				6					
				59249				15					
MS21920-28 		Purchased	No			200	Each	29.0000	4	4			
Clamp(per MIL-DTL-8783C)												13.06.27	
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				FG				5		125228			
				105884				5					
				LG050				24					
				116839				2					
				117344				22					

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

# Picklist Print

Tuesday, May 31, 2011 10:44:31 AM

Page 2

Work Order ID: 70198



Parent Item: D205-596-107



Parent Item Name: Crosstube Aft Extended

Start Date: 5/31/2011

Required Date: 6/16/2011

Start Qty: 1.00

Required Qty: 1.00

D3595-063-530

Manufactured No

200

Each

42.0000

4

4



13.06.27

RUBBER CUSHION

Location

Loc Qty

Loc Code

LG055

42

63407

6

67185

36

101880

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

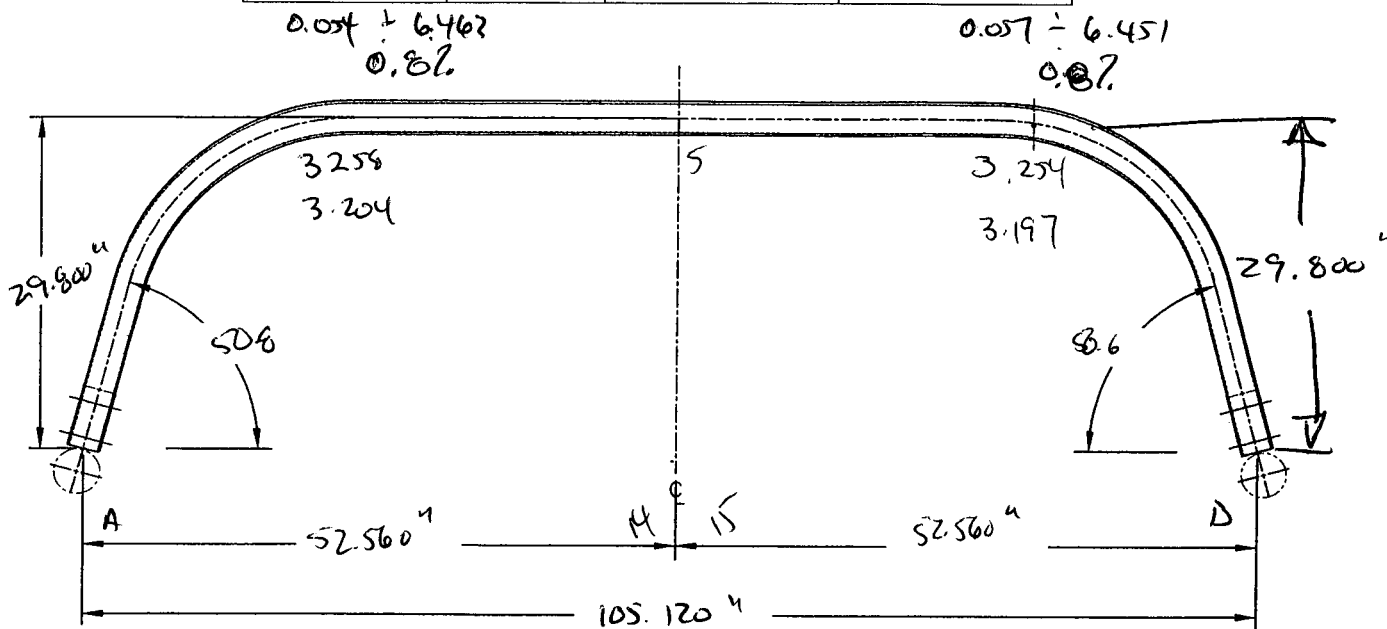
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

DART AEROSPACE LTD		Work Order:	70198
Description: Crosstube High-High Aft		Part Number:	D205-596-107
Inspection Dwg: D205-596-107 Rev: B		Page 1 of 1	

Required Dimension	Min	Max
Height	29.7	29.9
1/2 Span	52.4	52.6
Angle	49	52
Total Span	104.8	105.2



Comments
SIDE A2 0.8% crushing @ 14 PASSES
MIDDLE = 5 PASSES
SIDE B = 0.8% crushing @ 15 PASSES

QC15 Inspection	16
Date	13/05/28

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	08.04.21	Dwg Rev updated	KJ/JM	

W/O:		WORK ORDER CHANGES					
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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**PARTS LIST:**

Qty	Part Number	Description
X	D205-596-107	CROSSTUBE ASSEMBLY, HI-HI AFT
1	D6008-180	CROSSTUBE
2	D2940-1	SUPPORT
4	D3595-063-530	RUBBER CUSHION
4	MS21920-28	CLAMP
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

**GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURE FROM D6008-180  
FINISHED LENGTH = 127.28 ± 0.02
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH  
VIBRATING STYLUS
- 7) WEIGHT: 50 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE
- 9) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO  
BENDING IS 6% BASED ON O.D.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS  
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT  
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT  
WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION  
AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-28 CLAMPS WITH D3595-063-530 RUBBER CUSHIONS TO SECURE D2940-1  
SUPPORT ON THE TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE  
CROSSTUBE SUPPORT.  
**NOTE: IT IS ACCEPTABLE TO SUBSTITUTE MS21920-28 CLAMPS WITH LONGER OR SHORTER  
MS21920-XX CLAMPS TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF  
1.5 THREADS IN SAFETY ON THE NUTS.**
- 13) TORQUE CLAMPS 80 TO 100 IN-LB

**DEO ATTACHED**

RELEASED  
BY: D. H. [Signature]

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 70198

07-11-05-31

B	SUPPORT NOW MAGNOBONDED; REMOVE D2856-600-1009 ABRASION STRIP; UPDATED NOTES; ADDED D3595-063-530 CUSHION	MB	07.12.03
A	NEW ISSUE	DS	02.11.20
REV.	DESCRIPTION	BY	DATE
DESIGN	<u>4</u>	<b>DART AEROSPACE LTD</b>	
DRAWN	<u>4</u>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<u>PH</u>	DRAWING NO.	REV. B
MFG. APPR.	<u>PH</u>	D205-596-107	SHEET 1 OF 2
APPROVED	<u>PH</u>	TITLE	SCALE
DE APPR.	<u>PH</u>	CROSSTUBE ASSEMBLY, HI-HI AFT	NTS
DATE	07.12.03	<small>COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

**Dart Aerospace Ltd**

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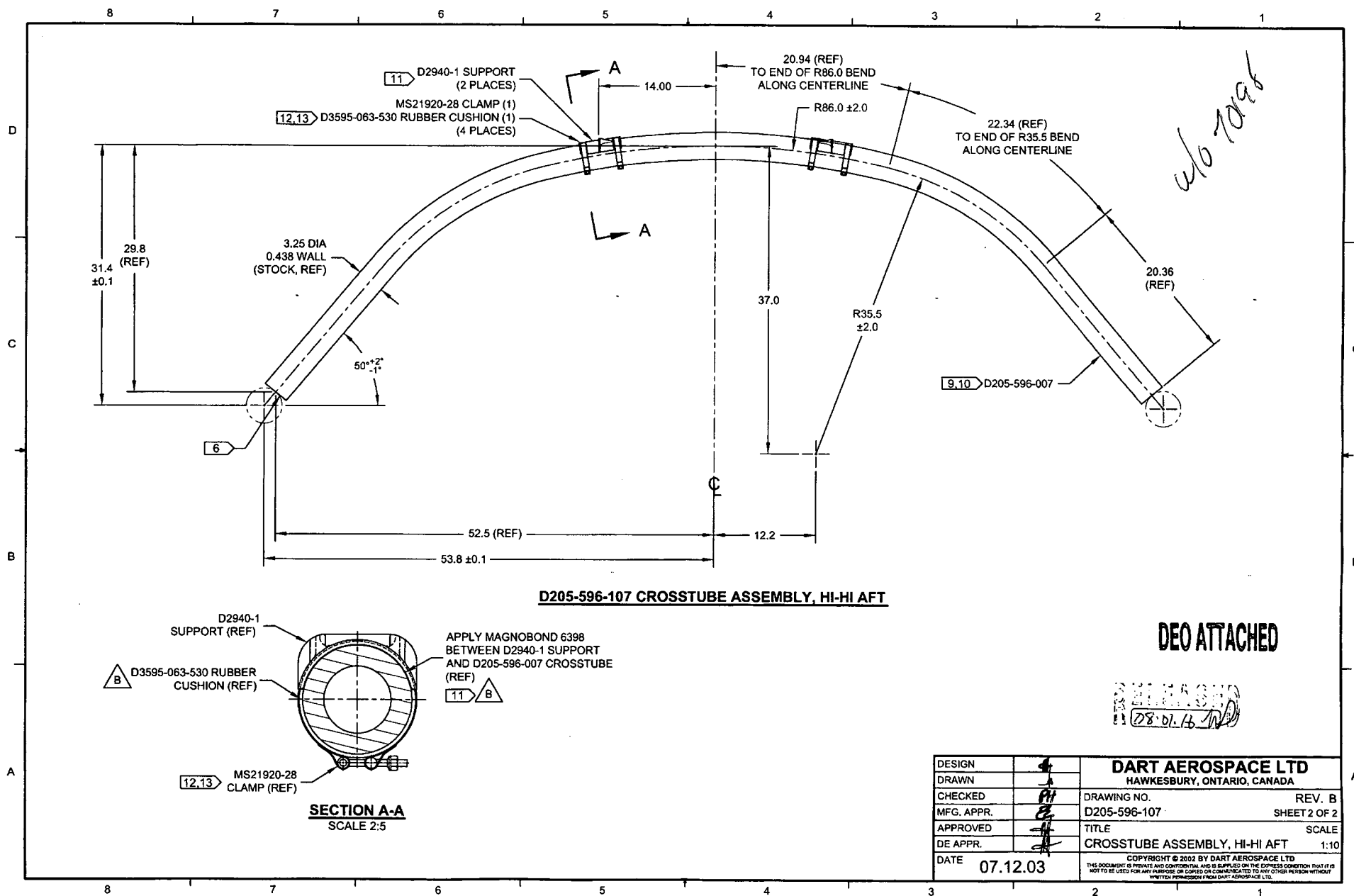
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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DRAWING NO. D205-596-107	TITLE CROSSTUBE	REV. B	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D205-596-107-B-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>AD</i>	CHECKED <i>PH</i>	MFG. APPR. <i>EE</i>	APPROVED <i>AND</i>	DE APPR. <i>#</i>			
DATE 09.05.01	DATE 09.05.15	DATE 09.06.15	DATE 09/06/16	DATE 09/06/16			

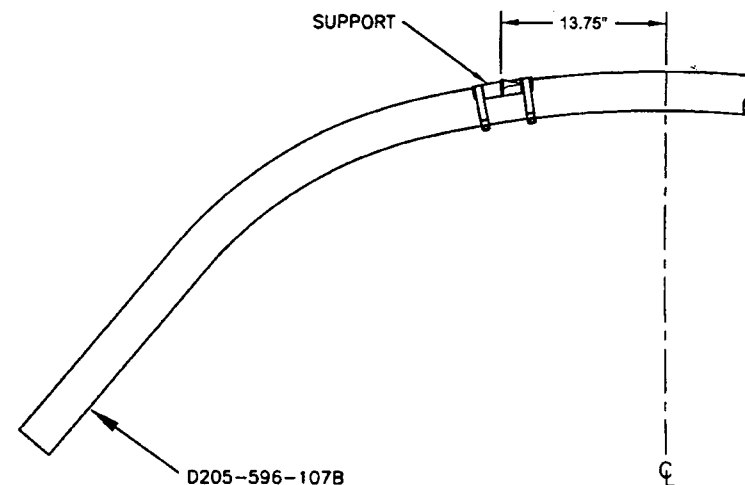
**CHANGE:**

ADD THE FOLLOWING CROSSTUBE ASSEMBLY:

Part Number	Description
D205-596-107B	CROSSTUBE ASSEMBLY (214 HI-HI AFT)

THE D205-596-107B CROSSTUBE HAS THE SAME PARTS LIST AS THE D205-596-107 CROSSTUBE. HOWEVER, INSTALL THE SUPPORTS AS SHOWN IN FIGURE 1 OF THIS ENGINEERING ORDER. THE NEW KIT IS OTHERWISE ASSEMBLED PER THE D205-596-107 CROSSTUBE.

**RELEASED**  
09/06/16 *AD*



**FIGURE 1 - SUPPORT INSTALLATION**

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